



Is Your Town Energy Forward? Adding an Energy Chapter to Your Town's Master Plan

Charlie Forcey | Chair, Durham Energy Committee | June 4, 2016

Spring Planning and Zoning Conference

Office of Energy and Planning, Concord, NH

Durham: A College Town

- Population: 17, 625 in Fall 2015
 - 5,800 Residents
 - 11,825 UNH Students
- Small Town/Large Town
 - \$14m Annual Budget
 - ~ 15 Municipal Buildings
 - Fire, Water, and Sewer (w/UNH)
- Cooperative School District (w/Lee & Madbury)



Durham Energy Committee

- Founded in 2007
- Primary Mission:
 - **Reduce the quantity** of energy consumed by the town and its residents
 - **Improve the quality** of the remaining energy in terms of cost, environmental impact, and local economic effects.



Laying the Foundation: Outreach

- 2008: Energy Chapter
Authorized by RSA 674:2(n).
- Foundational
 - 2008: Public Input Session
 - 2009: Public Input Session
- During Drafting Process
 - 2011: Visioning Forum: Energy
 - 2011: Master Plan Survey
- Public Hearings & Approvals
 - 2012-2015: Public, MP Committee, Planning Board

2011 Visioning Forum: Energy

What Do We Look Like?

A green town

Durham's downtown is somewhat walkable – weak links

Lack of accommodations for pedestrians

Need more green space/landscaping along streets and facilities

Durham is not bicycle friendly – system is fragmented

Need integration with roadways

Best transit in NH (Wildcat and COAST)

What Will We Look Like?

More sustainable and alternative energy sources

A community with a fully integrated bicycle system

Green housing

Embracing smart growth principles to afford density

More public transportation

Multi-modal transportation connecting neighborhoods with downtown

TOTAL NUMBER OF PARTICIPANTS

90 citizens

Master Plan Survey Highlights

Energy Concerns, 2011

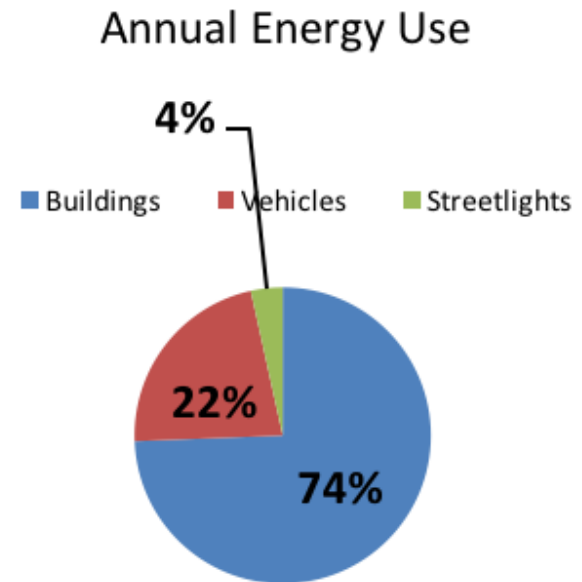
2011 Master Plan Survey: Energy

How Important are the Following Attributes to You?

	<i>Overall Positive Response Rate</i>	<i>Strongly Agree</i>	<i>Somewhat Agree</i>
Implementation of additional energy conservation measures from municipal facilities	92%	65%	27%
Continuing the re-development of existing structures	89%	51%	38%
Development of alternative energy sources for municipal facilities	85%	59%	26%
Importance of pedestrian and bicycle friendliness	82%	52%	30%
Change in Town codes to promote energy-efficient building construction	82%	56%	26%
Establishment of one or more conveniently placed park-and-rides for carpooling	76%	38%	38%
Improving the bike lane network downtown	74%	41%	33%
Better sidewalks downtown	73%	32%	41%
Better crosswalks downtown	68%	35%	33%
Better biking and walking access to the downtown	59%	33%	26%
Improvements to transportation that connects the downtown with recreation opportunities	39%	12%	27%
Improvements to public transportation to downtown	28%	10%	18%
TOTAL NUMBER OF PARTICIPANTS	467 citizens		

Baselining Durham's Energy Use

- 2008-2010: Small Town Carbon Calculator (STOCC, now UNH [CarbonMap](#))
- 2011: Peregrine Inventory Tool (ETAP funded)
- 2012: Vehicle procurement studies on MPG, maintenance, and cost of ownership for Town vehicles
- 2015-present: EPA Portfolio Manager



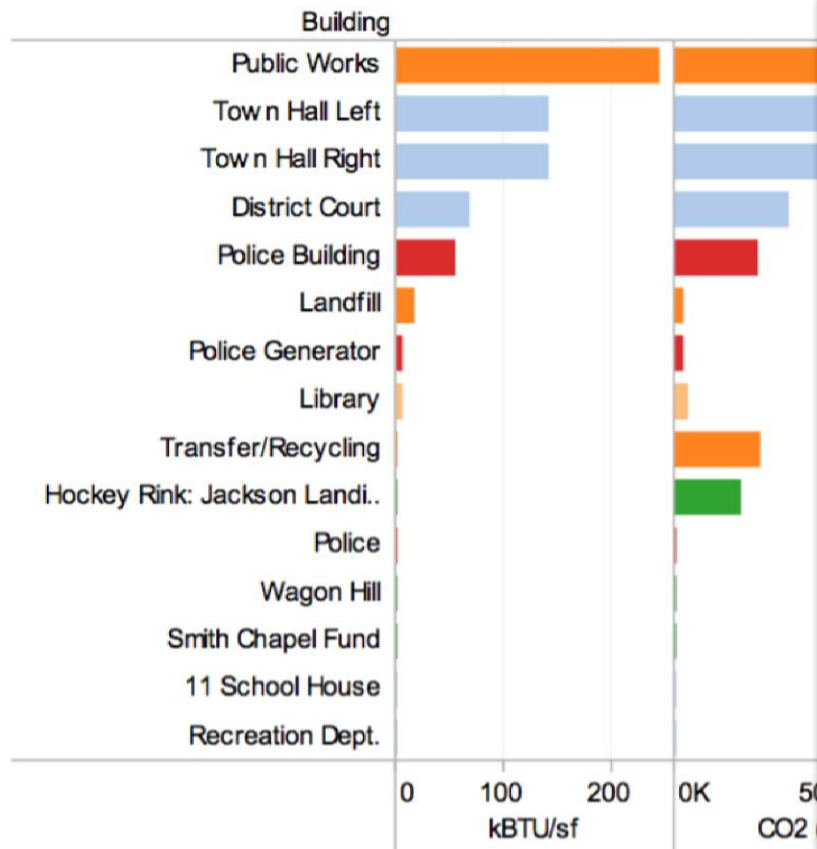
Inventory with STOCC

2010

	Buildings		Vehicles		Streetlights		Grand Total
	#	% of total	#	% of total	#	% of total	
Annual Fuel Expense	\$359,988	64%	\$129,508	23%	\$74,793	13%	\$564,289
Annual CO2 Emissions (lbs)	3844367	74%	1058041	20%	277694	5%	5,180,101
Annual Energy Use (MMBtu)	22441.2	74%	6683.0	22%	1045.8	3%	30170.0

Prioritize with Peregrine

Building Efficiency, Emissions and Cost

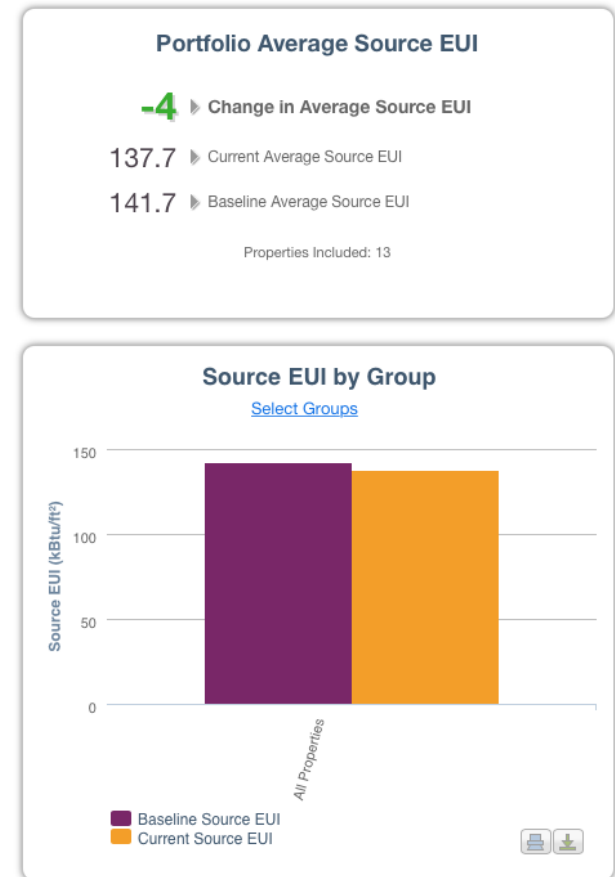


Efficiency and Use



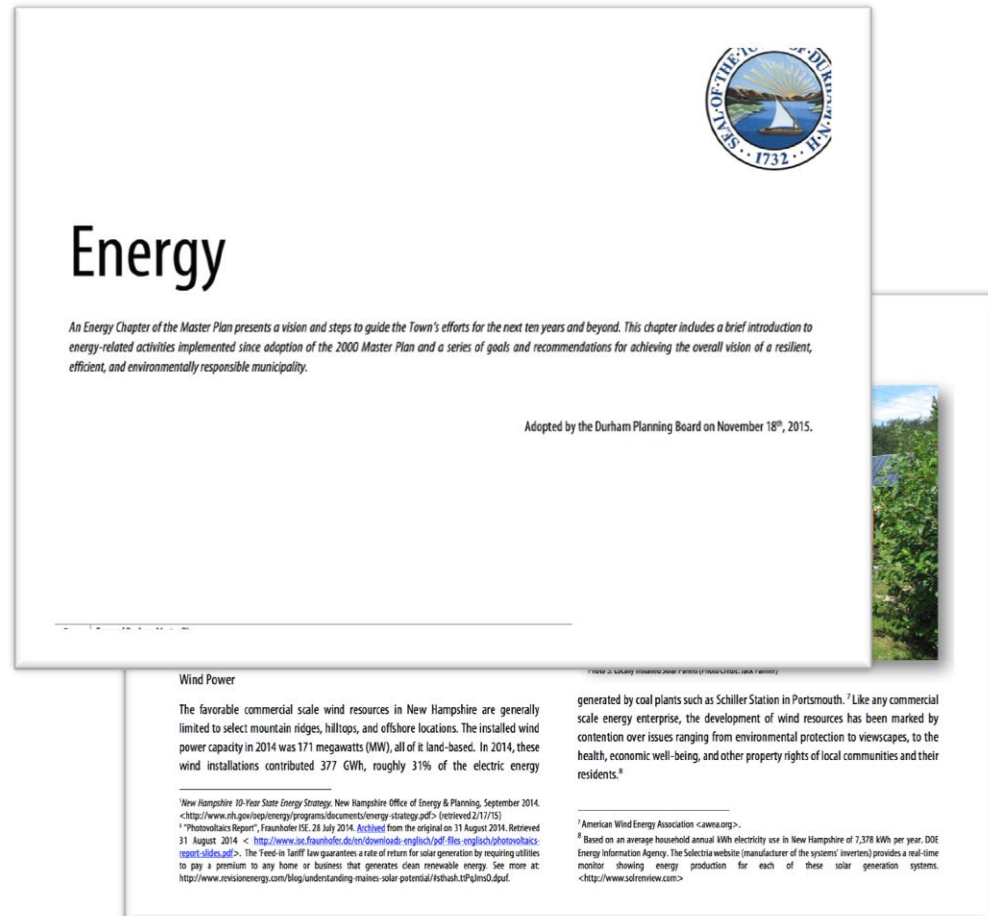
Monitor with Portfolio Manager

- Avoid the four horseman of bad efficiency data (weather, square footage, comparisons, and energy types)
- Prioritize under performing buildings or large consumers of carbon intensive fuels
- Audit the effectiveness of new buildings and improvement projects
- Report annually or as needed a set of comparable figures to explain usage and cost changes over time.
- Lower Source EUI and GHG Emissions Trends



Highlights of the Energy Chapter

- Survey of regional, state, and local energy usage and sources
- Three Pillars
 - Transportation
 - Housing
 - Renewable Energy
- Goals and Recommendations



Putting the Energy Chapter into Action

- Improving Current Energy Use
 - Reducing the **Quantity** of Energy Used
 - Improving the **Quality** of Energy Used
- Shaping Future Energy Use
 - Step 1: Energy Planning
 - Step 2: Raise the Bar with Code
 - Step 3: Energy and the Planning Process
 - Step 4: Expedited Permits Exemptions

Reducing the Quantity of Energy Used

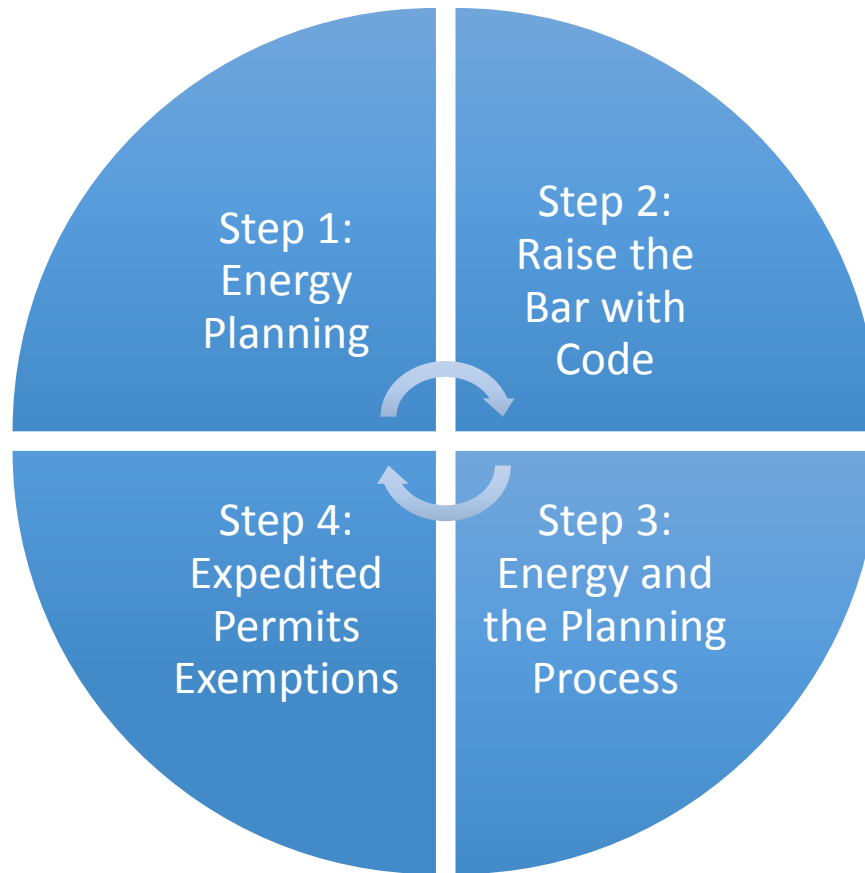
- ☐ LED Light Conversions
- ☐ Building Efficiency Updates and Button Up Workshops
- ☐ LEED and LEED-like Standard for New Construction
- ☐ Bicycle and Walkability Improvements
- ☐ Electric Vehicle Chargers and Education



Improving the **Quality** of Energy Remaining

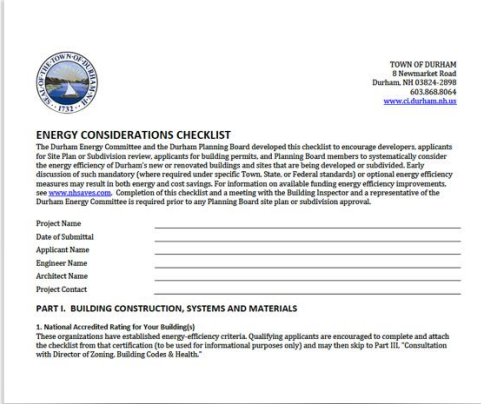


Raising the Bar through Policy, Zoning, Planning, and Code Enforcement



Step 1: Energy Planning

- Complete or update your energy master plan to include integration of energy considerations into building, transportation, and energy procurement processes of your town or city. ([Durham Energy Chapter pdf](#))
- Update zoning regulations to follow solar siting best practices according to [OEP guidelines](#).
- Create an energy considerations checklist that can remind home owners, developers, and municipal building teams of energy related considerations as they plan projects and renovations. ([Energy Checklist pdf](#))



The image shows a document titled "TOWN OF DURHAM" with contact information: 8 Newmarket Road, Durham, NH 03824-2099, 603.866.8064, and www.ci.durham.nh.us. Below this is the "ENERGY CONSIDERATIONS CHECKLIST". The text explains that the Durham Energy Committee and the Durham Planning Board developed this checklist to encourage developers to consider energy efficiency. It includes a section for project information with fields for Project Name, Date of Submittal, Applicant Name, Engineer Name, Architect Name, and Project Contact. Below this is "PART I. BUILDING CONSTRUCTION, SYSTEMS AND MATERIALS" with a note about National Accredited Rating for Your Building(s).

ENERGY CHECKLIST

Since 2013 - Building Permit Checklist for Energy Efficiency

8 Newmarket Road
Durham, NH 03824

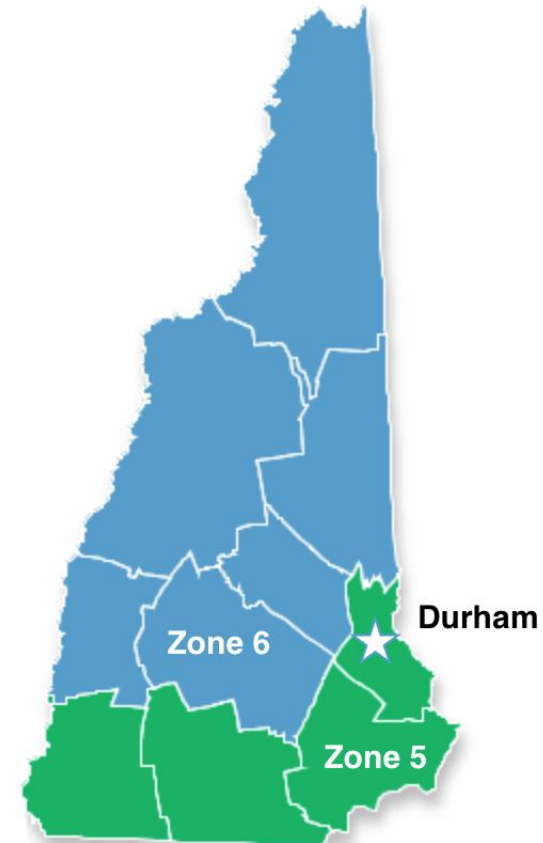
The Energy Committee and the town Code Enforcement Officer, Tom Johnson, observed that developers increasingly faced tough questioning from the public and town boards on the

energy efficiency aspects of their projects. Code inspections to enforce promised improvements, however, often came late in the building process when budgets were low and stress

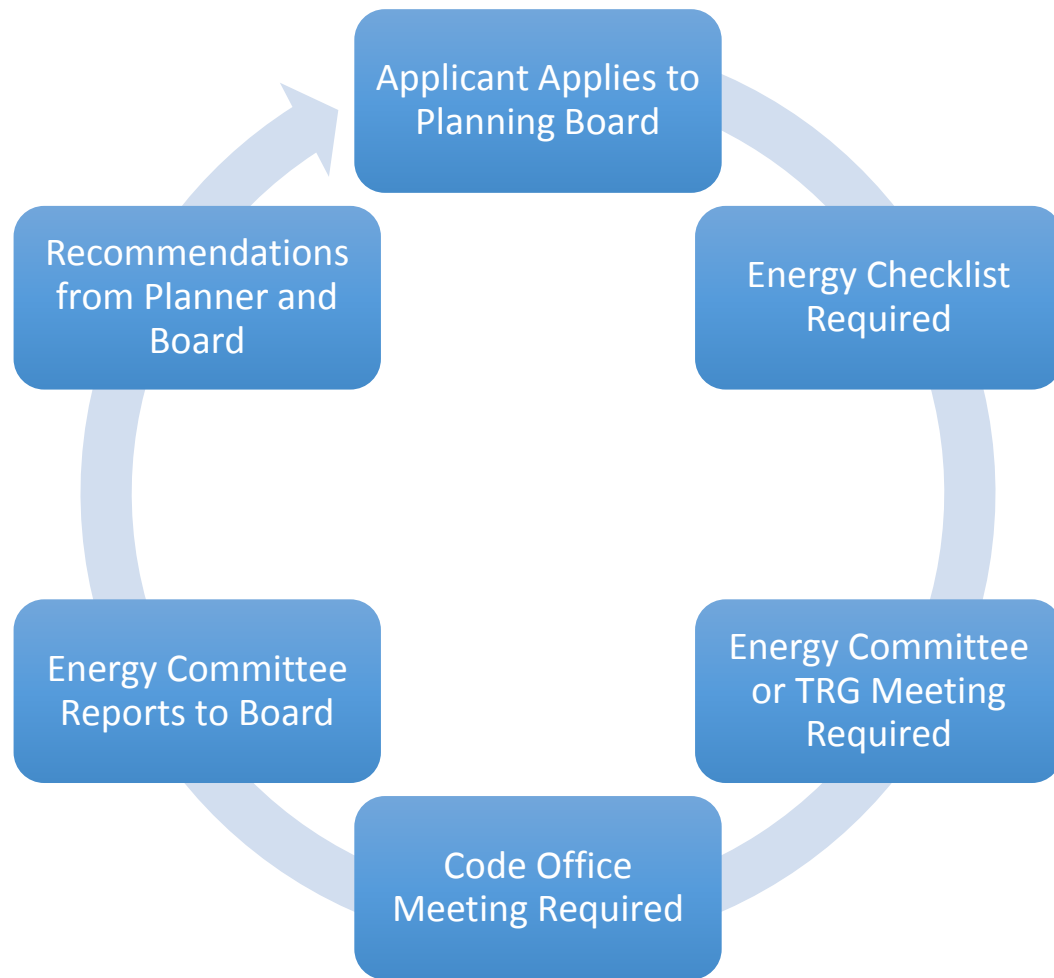
high. In response, the Town now requires completion of an Energy Considerations Checklist when filing building permits to review a building project's energy efficiency features as early as possible.

Step 2: Raise the Bar with Code

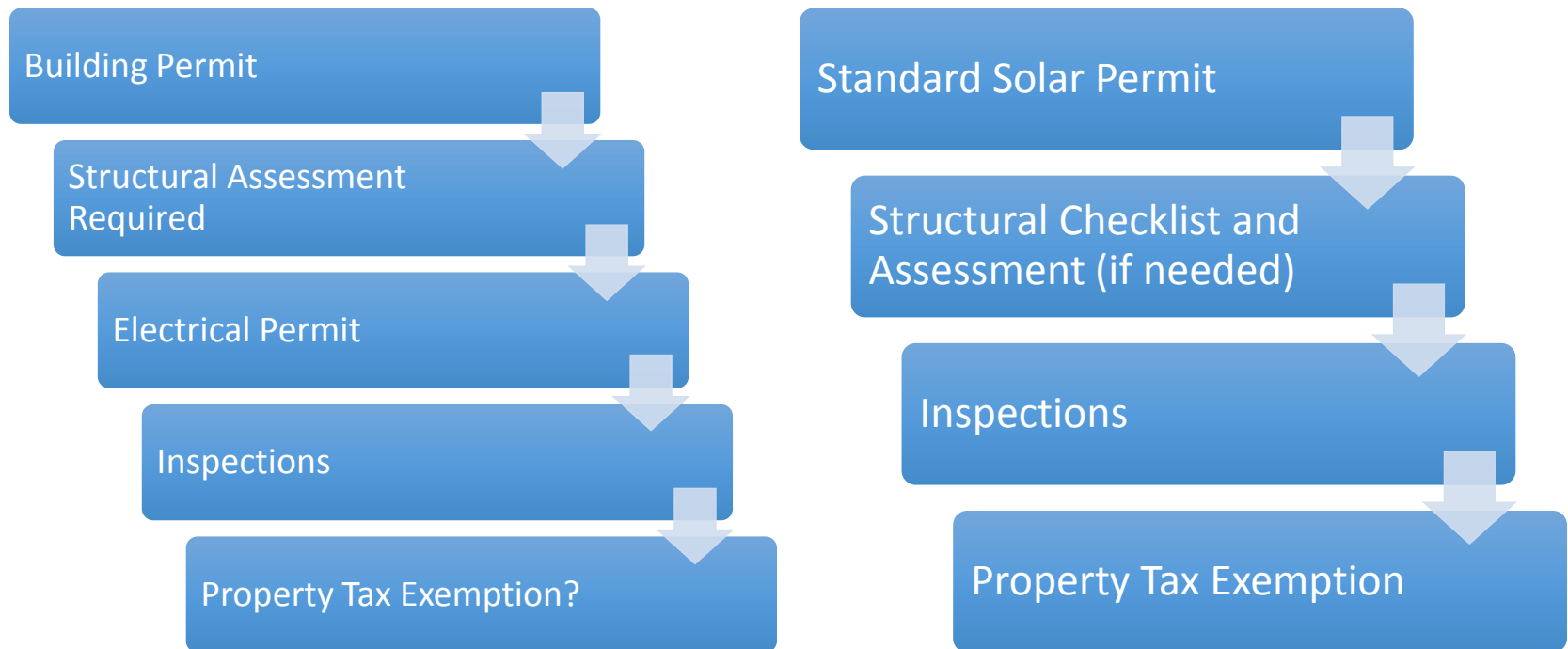
- Adopt the latest printed IECC Energy code (Durham Ordinance #2011-01 [word pdf](#))
- Adjust your Climate Zone and declare a more restrictive zone if you are on close to the border (Durham Ordinance #2011-01)
- Code enforcement officers (perhaps shared with other towns) may be required for implementing more restrictive codes than the state standard.



Step 3: Energy and the Planning Process

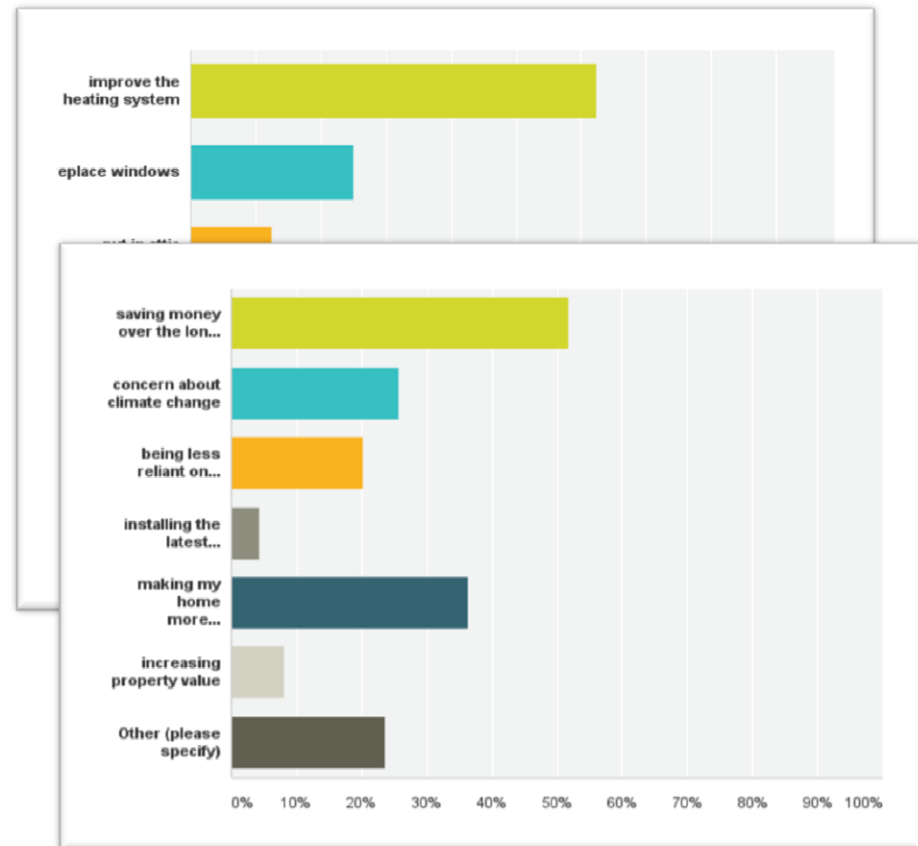


Step 4: Expedited Permits and Tax Exemptions



Maintaining the Foundation: Community Outreach

- Annual Pillars Survey Cycle
 - 2015: Bicycle, Pedestrian, Vehicle Survey
 - 2016: Housing and Building Efficiency Survey
 - 2017: Renewable Energy Survey (in progress)
- Public Hearings
- Annual Reporting



References

- Laureen Blissard, [The IECC - 2009, 2012 and 2015: A Cross-Code Comparison](#): The Green Builder Coalition analyzes the residential energy efficiency sections of the 2015 IECC, 24 Jun 2015.
- Pacific Northwest National Laboratory, “[Energy and Energy Cost Savings Analysis of the 2015 IECC for Commercial Buildings](#),” US Department of Energy, Aug 2015.
- [Minutes from 11 Jan 2011 Town Council Meeting](#) discussing the latest printed energy code. The measure passed at the next town council meeting on [24 Jan 2011](#).
- NH Office of Energy and Planning, [NH Guide to Residential Rooftop Solar PV Permitting, Zoning and Interconnection](#)